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KIRSCHSTEIN, OTTINGER, ISRAEL
& SCHIFFMILLER, P.C.
425 FIFTH AVENUE
5TH FLOOR
NEW YORK, NY 10016-2223

EXAMINER	
PARK, JEONG S	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/531,188	Applicant(s) CAVIGLIA ET AL.	
	Examiner JEONG S. PARK	Art Unit 2454	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 24 October 2008.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 89-132 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 89-132 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This communication is in response to Application No. 10/531188 filed on 4/12/2005. The amendment presented on 10/24/2008, which amends claims 89 and 111, is hereby acknowledged. Claims 89-132 have been examined.

Response to Arguments

2. Applicant's arguments filed 10/24/2008 have been fully considered but they are not persuasive.

In response to argument on claims 89 and 111 “Andersson does not disclose or suggest such a partial deactivation of a recovery path or, before the fault is repaired, deactivating any of the protection paths for providing an alternative to those parts of the worker path not affected by the fault.”

Kinoshita teaches as follows:

Each node determines a protection path route by setting itself as the start-point node for restoring node failure at their adjacent nodes on the working path and link failures on both sides of these adjacent nodes (see, e.g., page 3, paragraph [0068]);

Local repair protection paths for restoring node or link failures on the working path teaches local detouring per node or link failures for the restoration purpose (see, e.g., page 3, paragraph [0066]); and

The route determining section determines the optimum route to the PML by excluding any node or link to be bypassed (see, e.g., page 7, paragraph [0126]).

Therefore each node (protection path setup/release control section 66 in figure 19 in each node) can release the determined protection path locally while the other protection paths for the other node failure are still active.

Therefore, the amended claims 89 and 111 are rejected under 35 U.S.C. 103(a) as being unpatentable over Andersson et al. (U.S. Pub. No. 2002/0004843 A1) in view of Kinoshita et al. (U.S. Pub. No. 2002/0172149 A1) as presented below.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 89-97 and 111-119 are rejected under 35 U.S.C. 103(a) as being unpatentable over Andersson et al. (hereinafter Andersson)(U.S. Pub. No. 2002/0004843 A1) in view of Kinoshita et al. (hereinafter Kinoshita)(U.S. Pub. No. 2002/0172149 A1).

Regarding claims 89 and 111, Andersson teaches as follows:

A data communications system (a system, device, and method for bypassing network changes in a communication network, see, e.g., abstract, lines 1-2), comprising:

A plurality of nodes (A, B, C and D in figure 1) and a plurality of links (connections between each node A, B, C and D in figure 1) for providing connections between the nodes (figure 1 shows an exemplary communication network used to

bypass network failures, see, e.g., page 3, paragraph [0044], lines 1-5);

A subset of the links and the nodes (node A, B, and C and connections between each nodes) being operative for forming a worker path (primary path, 110 in figure 1) for carrying worker data through the communications system (see, e.g., page 3, paragraph [0044], lines 5-11);

A further subset of the links and the nodes (node A, D and C and connections between each nodes) being operative for forming a plurality of protection paths (recovery path, 112 in figure 1) for carrying non-worker data in the absence of a fault in the worker path, and each being operative for providing an alternative path for the worker data in a different part of the worker path in the event of the fault in the worker path (the recovery path is available in the event of a network change in order to bypass the network change, see, e.g., page 2, paragraph [0021], lines 3-6 and the network change includes link failures, node failures and route changes, see, e.g., page 3, paragraph [0042], lines 3-5);

Protection means, in which the alternative paths (recovery paths) are predetermined by the protection means prior to detection of the fault in the worker path (primary path)(the recovery paths are pre-computed so as to circumvent potential failure points in the network, and are only activated in the event of a network failure, see, e.g., page 5, paragraph [0063], lines 3-10), the protection means being operative for activating the entire plurality of protection paths (recovery paths) to carry the worker data upon detection of the fault in the worker path (primary path)(the logic switches communications from the primary path to a recovery path in order to bypass the network

failure, 510 in figure 5, see, e.g., page 4, paragraph [0057], lines 8-10), and the protection means being further operative for identifying the location of the fault (the detecting node signals the other nodes when the failure is detected so by signaling the failure between nodes it identifies the location of the fault, see, e.g., page 7, paragraph [0097] and [0098]), for returning the worker data to those parts of the worker path not affected by the fault (the network nodes switch certain communications to recovery paths while communication unaffected by the network failure remain on the primary paths, see, e.g., page 3, paragraph [0048], lines 3-8); and

Deactivating the recovery paths by activating the new set of primary path (computing the new set of primary paths based upon the topology information and activating the new set of primary paths in order to override the temporary switch over to the recovery paths, see, e.g., page 4, paragraph [0053]).

Andersson does not teach a plurality of disjoint detours which each providing an alternative path for the worker data in a different part of the worker path nor deactivating before the fault is repaired any of the protection paths for providing an alternative to those parts of the worker path not affected by the fault.

Kinoshita teaches as follows:

A subset of the plurality of links (links connection between nodes A to J in figure 1) and the plurality of nodes (nodes A to J, in figure 1) being operative for forming a protection path for carrying non-worker data in the absence of a fault in the worker path (when setting up a working path, a protection path is automatically set up by taking each node on the working path as a start point, see, e.g., abstract), the

protection path comprising a plurality of disjoint detours (40, 42, 44 and 46 in figure 8, see, e.g., page 4, paragraph [0071]), each detour being operative for providing an alternative path for the worker data in a different part of the worker path in the event of a fault in the worker path (each node determines a protection path route by setting itself as the start-point node for restoring node failure at their adjacent nodes on the working path and link failures on both sides of these adjacent nodes, see, e.g., page 3, paragraph [0068]);

The protection means being further operative for identifying the location of the fault, and for returning the worker data to a part of the worker path not affected by the fault from at least one of the plurality of detours providing an alternative to that part of the worker path not affected by the fault, while those of the plurality of detours providing an alternative to parts of the worker path which are affected by the fault continue to carry the worker data (local repair protection paths for restoring node or link failures on the working path teaches local detouring per node or link failures for the restoration purpose, see, e.g., page 3, paragraph [0066]); and

Deactivating (protection path setup/release control section 66 in figure 19 in each node) before the fault is repaired any of the protection paths for providing an alternative to those parts of the worker path not affected by the fault (the route determining section determines the optimum route to the PML by excluding any node or link to be bypassed, see, e.g., page 7, paragraph [0126]). Therefore each node (protection path setup/release control section 66 in figure 19 in each node) can release the determined

protection path locally while the other protection paths for the other node failure are still active.

It would have been obvious for one of ordinary skill in the art at the time of the invention to combine Andersson with Kinoshita to include setting up a local repair protection paths as taught by Kinoshita in order to locally and efficiently restore node or link failures on the working path.

Regarding claims 90 and 112, Andersson teaches as follows:

The nodes of the further subset comprise storage (forwarding table, 200 in figure 2) for storing details of the protection paths (recovery paths, 220 in figure 2) prior to the detection of the fault in the worker path (the recovery paths are installed in the forwarding table at each relevant router so that the recovery paths are available in the event of a network change, see, e.g., page 2, paragraph [0021], lines 3-6).

Regarding claims 91 and 113, Andersson teaches as follows:

The details of the protection path (recovery paths, 220 in figure 2) are associated with a unique path identifier (marker, 206 in figure 2)(the forwarding table, 200 in figure 2, identifies the recovery path by mapping the outgoing interface I_D with destination node C, see, e.g., page 3, paragraph [0047], lines 1-9).

Regarding claims 92 and 114, Andersson teaches as follows:

Each of the nodes of the further subset comprise a protection table (forwarding table, 200 in figure 2) for storing the details of the protection path to which it belongs (the recovery paths are installed in the forwarding table at each relevant router so that

the recovery paths are available in the event of a network change, see, e.g., page 2, paragraph [0021], lines 3-6).

Regarding claims 93 and 115, Andersson teaches as follows:

At least one of the nodes common to both subsets (node A in figure 1) comprises means for detecting the fault in the worker path, and means for activating the protection paths by sending an activate message (signaling the failure) to the nodes of the further subset upon detection of the fault in the worker path (node A detects network failure between node A and node C and forwards the failure signal to node D, which is on the recovery path, see, e.g., page 3, paragraph [0044], lines 5-11).

Regarding claims 94 and 116, Andersson teaches as follows:

The nodes comprising means for sending the activate message (signaling the failure) also comprise means for sending the activate message to each adjacent node of the further subset (the detecting node signals the other nodes when the failure is detected and the signaling is a simple sub-routine call in order to initiate the switch over to the recovery paths, see, e.g., page 7, paragraph [0098], lines 1-6).

Regarding claims 95 and 117, Andersson teaches as follows:

The activate message contains a unique path identifier (marker, 206 in figure 2) to inform the nodes of the further subset which connections to activate (the detecting node identifies the nodes of the recovery path by marker, 206 in figure 2, see, e.g., page 3, paragraph [0046]).

Regarding claims 96 and 118, Andersson teaches as follows:

The nodes comprise means for detecting the location of the fault in the worker path and means for, upon detection of the fault location, sending a deactivate message (signaling the failure) through the first-mentioned subset in a direction away from the fault (removing and blocking the primary path from the forwarding table see, e.g., page 3, paragraph [0048], lines 8-12 and the detecting node signals the other nodes when the failure is detected, see, e.g., page 7, paragraph [0098], lines 1-6).

Regarding claims 97 and 119, Andersson teaches as follows:

Each node comprises means for detecting receipt of the deactivate message and, upon receipt of such a message (the detecting node signals the other nodes when the failure is detected and the signaling is a simple sub-routine call in order to initiate the switch over to the recovery paths, see, e.g., page 7, paragraph [0098], lines 1-6), for deactivating any path (removing and blocking the primary path) passing from that node via nodes of the further subset where those paths do not form a protection path to a faulty part of the worker path (removing and blocking the primary path from the forwarding table see, e.g., page 3, paragraph [0048], lines 8-12 and the detecting node signals the other nodes when the failure is detected, see, e.g., page 7, paragraph [0098], lines 1-6).

5. Claims 98-110 and 120-132 are rejected under 35 U.S.C. 103(a) as being unpatentable over Andersson et al. (hereinafter Andersson)(U.S. Pub. No. 2002/0004843 A1) in view of Kinoshita et al. (hereinafter Kinoshita)(U.S. Pub. No. 2002/0172149 A1) and further in view of Peterson et al. (hereinafter

Peterson)(Computer Networks a Systems Approach Section 4.2.2 by Larry L. Peterson et al., 2dn edition, pages 284-292, published by Morgan Kaufmann Publishers, October 1999).

Regarding claims 98 and 120, Andersson teaches as follows:

Allocating the links and the nodes at least one cost value (routing information) relative to the links and the nodes of the worker path (primary path)(the network nodes exchange routing information as part of a routing protocol such as distance-vector protocols and link-state protocols, wherein the allocating the routing information for each nodes and links is inherent, see, e.g., page 5, paragraph [0061], lines 1-7), and means for selecting on the basis of the at least one cost value (routing information) a further subset of the nodes and the links to form a protection path (recovery path) for at least one of the links and the nodes of the worker path (each network node determines the primary and recovery paths from the routing information, see, e.g., page 5, paragraph [0061], lines 8-15 and see, e.g., page 5, paragraph [0063], lines 1-3 for computing recovery paths).

Anderson in view of Kinoshita do not teach details of the distance-vector protocols related to the allocating a cost value to the links and the nodes.

Peterson teaches as follows:

Each node constructs a one-dimensional array (a vector) containing the distances (costs) to all other nodes;

Each node distributes that vector to its immediate neighbors; and

Each node knows the cost of the link to each of its directly connected neighbors (see, e.g., page 284, lines 1-6).

It would have been obvious for one of ordinary skill in the art at the time of the invention to combine Andersson in view of Kinoshita with Peterson to include details of the distance-vector protocols related to the allocating a cost value to the links and the

nodes, as taught by Peterson in order to select efficiently primary or recovery paths based on the distances (costs) among multiple paths.

Regarding claims 99 and 121, Andersson teaches as follows:

Selecting the subset that has the lowest cost value (selecting as the primary paths the shortest paths, which have the least hop counts, to each potential network destination, see, e.g., page 5, paragraph [0061], lines 8-10).

Regarding claims 100-102 and 122-124, Andersson teaches as follows:

Allocating the nodes and the links on the worker path (primary paths) other than the at least one of the nodes and the links to be protected (recovery paths) a cost value lower than the cost value for other nodes and links (the recovery paths are marked as non-preferred or lower priority paths compared to the primary paths, see, e.g., page 3, paragraph [0043], lines 9-12).

Regarding claims 103 and 125, Andersson teaches as follows:

A cost value for the at least one of the nodes and the links to be protected is set so that the at least one of the nodes and the links will not be selected (the recovery paths are marked as non-preferred or lower priority paths compared to the primary paths, and not the recovery paths are used for forwarding packets during normal operation, see, e.g., page 3, paragraph [0043], lines 9-12).

Regarding claims 104 and 126, Andersson teaches as follows:

Further subsets of the nodes and links, wherein the further subsets are interpreted as a plurality of primary or recovery paths, for forming both a further worker path and a protection path for the further worker path (each network node determines

the primary and recovery paths from the routing information, see, e.g., page 5, paragraph [0061], lines 8-15 and see, e.g., page 5, paragraph [0063], lines 1-3 for computing recovery paths).

Regarding claims 61-63 and 83-85, Andersson teaches as follows:

The recovery paths are marked as non-preferred or lower priority paths compared to the primary paths, and not the recovery paths are used for forwarding packets during normal operation (see, e.g., page 3, paragraph [0043], lines 9-12).

It would have been obvious for one of ordinary skill in the art at the time of the invention to modify Andersson to include marking the one of the recovery paths as an intermediate or higher cost value relative to the worker path in order to set the priority among multiple of primary or recovery paths.

Regarding claims 108 and 130, Andersson teaches as follows:

Allocating the links and the nodes a cost value (the network nodes exchange routing information as part of a routing protocol, wherein the allocating the routing information for each nodes and links is inherent, see, e.g., page 5, paragraph [0061], lines 1-7).

It would have been obvious for one of ordinary skill in the art at the time of the invention to modify Andersson to allocate a cost value relative to each link and node of the worker path in order to set the priority among multiple of primary or recovery paths.

Regarding claims 109 and 131, Andersson teaches as follows:

Determining the protection path prior to the detection of the fault in the worker

path (the recovery paths are pre-computed so as to circumvent potential failure points in the network, and are only activated in the event of a network failure, see, e.g., page 5, paragraph [0063], lines 3-10).

Regarding claims 110 and 132, Andersson teaches as follows:

Allocating the links and the nodes a further cost value relative to the further worker path (the network nodes exchange routing information as part of a routing protocol, wherein the allocating the routing information for each nodes and links is inherent, see, e.g., page 5, paragraph [0061], lines 1-7) and for selecting on the basis of the further cost value a further subset of the nodes and links to form the protection path for at least one of the links and the nodes of the further worker path (selecting as the primary paths the shortest paths, which have the least hop counts, to each potential network destination, see, e.g., page 5, paragraph [0061], lines 8-10).

It would have been obvious for one of ordinary skill in the art at the time of the invention to modify Andersson to allocate the links and the nodes a further cost value relative to the further worker path in order to set the priority among multiple of primary or recovery paths.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to JEONG S. PARK whose telephone number is (571)270-1597. The examiner can normally be reached on Monday through Friday 7:00 - 3:30 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn can be reached on 571-272-1915. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/J. S. P./
Examiner, Art Unit 2454

January 6, 2009

/Dustin Nguyen/
Primary Examiner, Art Unit 2454